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Original Research Paper

# Brain gym affect stress levels in narcotics inmates

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## Abstract
Inmates experience stress due to inner tension that arises as a result of incompatibility in the prison environment, so a way is needed so that stress can be overcome, one way to overcome stress is by brain gym. The purpose of this study is to determine the effect of brain gym on stress levels in narcotics inmates in Narcotics Prisons. This study uses a quasi-experimental research design in the form of a pretest-posttest design with control group. The research instrument used a questionnaire. The subjects in this study are narcotics inmates, as many as 26 people in the experimental group and 26 people in the control group. The data analysis technique used is a non-parametric static technique, a paired sample t-test with a significant level of 5%. The results of the t-stress test in narcotics inmates in the control group obtained a t-count value of (1.581) < t table (2.059) and a p-value (0.127) > 0.05, the results in the experimental group obtained a t-count value of (3.586) < t-table (2.059) and a p-value (0.001) < 0.05. There was an effect of brain gym on the experimental group. The results of the unpaired sample t-test obtained a result of 0.000, meaning there was a difference in stress levels in the experimental and control groups. Brain gym affect reducing stress levels in prisoners. Advice for drug addict inmates to apply brain gym independently to reduce stress levels in themselves.

**Keywords**: brain gym; narcotics inmates; stress levels

## 1. Introduction

Inmates during their detention experience stress due to previous trauma (Liu et al., 2021). The stress experienced by inmates is when they have to move from cell to cell and are made fun of by other prison inmates. Inmates also experience loneliness and have suicidal thoughts (Moore et al., 2021). Brain gym is a method that can help lower stress levels, clear the mind, and improve a person's ability to remember. Many previous studies have been conducted to examine the benefits of this brain exercise. Brain gym research is widely carried out but in the elderly such as literature review carried out by Lina and Kurniawan (2022). The results of the study explain that cognitive function in the elderly increases. Result literature review others are done by Pratidina (2023) that in the elderly who have dementia, brain gym affects cognitive ability. Research conducted Ningsih (2019) Stress levels of old age can be lowered through brain gym. Previous research on the use of brain gym was given to the elderly, in contrast to this study, brain gym was given to narcotics inmates.

Other research was also conducted by Ayu & Widarti (2023) The results were obtained that there was a difference in stress levels before and after administration Brain Gym. In other research conducted by Furqoni and Yuliani (2021) The results were obtained that before being given brain gym, most of the respondents experienced stress as many as 17 respondents. After being given brain gym intervention, as many as 15 respondents did not experience stress in undergoing learning at school. Research Cahyadi et al.

(2022) The results were obtained that the students who had been given Brain Gym had different stress compared to before given Brain Gym. The difference with previous research is that it uses a control group.

Other research by Alam & Mohanty (2023) It was found that the stress experienced by the given group Brain Gym different from the group that is not given Brain Gym. Stress levels are significantly related to gender, father's education and father's profession. Then other research was also carried out by Heni and Nurlika (2021) The results of brain gym can reduce psychological and physical tension due to the influence of brain gym on the neocortex and parasympathetic nerves. According to research Sutriani and Masnina (2019) The results were obtained that brain gym was able to reduce respondents' stress. The difference with the previous research is that the research will be conducted using narcotics inmates as respondents and is a research Quasi Experiment. The use of brain gym is widely carried out in school children, in contrast to this study, brain gym interventions are given to narcotics inmates to reduce the stress experienced by inmates. The purpose of this study is to determine the effect of brain exercise on stress levels in narcotics inmates in Class II A Narcotics Prison Yogyakarta.

## 2. Research Methods

This study uses a research design quasi experiment in the form of a pretest-posttest design with control group. The population in this study is 500 inmates with special drugs. Counting the sample using the slovin formula, the sample in this study was 42 narcotics inmates, a total of 10 respondents were taken to avoid dropping out. The inclusion criteria for inmates with drug cases, who experience stress disorders, respondents are taken from the isolation block, and respondents are taken from block D and block E. The exclusion criteria are inmates who are experiencing illness and who have disabilities. The instrument used in the study was the Depression Anxiety Stress Scales (DASS 42). Bivariate analysis uses the t test. To see the difference in stress levels before and after brain gym, the paired sample t test was used, while to see the difference in stress levels after gymnastics in two groups, an unpaired sample t test was performed. The collection of research data was carried out after obtaining a research ethics feasibility letter from the research ethics commission of Universitas 'Aisyiyah Yogyakarta with number 3080/KEP-UNISA/VII/2023.

## 3. Results and Discussion

### 3.1.Result

The characteristics of the respondents can be seen in Table 1.

**Table 1.** Respondent Characteristics

| Category | | Control Group | | Experimental Group | | Total | |
|---|---|---|---|---|---|---|---|
| | | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) |
| Age | Teenagers (10-19 years) | 6 | 23.1 | 10 | 38.5 | 16 | 30.8 |
| | Productive (20-59 years) | 20 | 76.9 | 16 | 61.5 | 36 | 69.2 |
| | Senior (> 60 years) | 0 | 0 | 0 | 0 | 0 | 0 |

| Category | | Control Group | | Experimental Group | | Total | |
|---|---|---|---|---|---|---|---|
| | | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Religion | Islam | 26 | 100 | 23 | 88.5 | 49 | 94.3 |
| | Christian | 0 | 0 | 1 | 3.8 | 1 | 1.9 |
| | Catholic | 0 | 0 | 2 | 7.7 | 2 | 3.8 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **53** | **100** |
| Last Education | No School | 0 | 0 | 1 | 3.8 | 1 | 1.9 |
| | SD | 1 | | | | | |
| | SMP | 7 | 3.8 | 0 | 0 | 1 | 1.9 |
| | SMA | 17 | 26.9 | 10 | 38.5 | 17 | 32.7 |
| | S1 | 1 | 65.4 | 12 | 46.2 | 29 | 55.8 |
| | | | 3.8 | 3 | 11.5 | 4 | 7.7 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Work | Not Working | 5 | 19.2 | 5 | 19.2 | 10 | 19.2 |
| | Laborer | 5 | 19.2 | 5 | 19.2 | 10 | 19.2 |
| | Private Employees | 10 | 38.5 | 14 | 53.8 | 24 | 46.2 |
| | PNS/TNI/ POLRI | 1 | 3.8 | 0 | 0 | 1 | 1.9 |
| | Driver | 5 | 19.2 | 1 | 3.8 | 6 | 11.6 |
| | Other | 0 | 0 | 1 | 3.8 | 1 | 1.9 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Marital Status | Marry | 11 | 42.3 | 7 | 26.9 | 18 | 36 |
| | Single | 14 | 53.8 | 17 | 65.4 | 21 | 40.4 |
| | Widower | 1 | 3.8 | 2 | 7.7 | 3 | 5.8 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Length of Detention | ≤ 5 Years | 18 | 69.2 | 18 | 69.2 | 36 | 69.2 |
| | > 5 Years | 8 | 30.8 | 8 | 30.8 | 16 | 30.8 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Duration of Consumption | ≤ 5 Years | 15 | 57.69 | 15 | 57.69 | 30 | 57.7 |
| | > 5 Years | 11 | 42.31 | 11 | 42.31 | 22 | 42.3 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |

Source: Primary Data, 2023

Based on Table 1, it can be seen that the distribution of respondents based on age is known to the majority of respondents in the productive age, namely 20-59 years old, as many as 36 people (69.2%). Respondents based on religion are known to be the majority of Muslims as many as 49 people (94.3%). Respondents based on the latest education are known to be the majority with a high school education level

of 29 people (55.8%). Respondents based on occupation were known to work as private employees as many as 24 people (46.2%). Respondents based on marital status are known to have single status (unmarried) as many as 21 people (40.4%). Respondents based on the length of detention were known to have a < 5 years of detention for 36 people (69.2%). Respondents based on the length of drug consumption are known to have a 5-year < consumption period of 30 people (57.7%).
The respondents stress levels can be seen in Table 2.

**Table 2.** Respondents Stress Levels

| | Stress levels | Experimental Group | | Control Group | | Total | |
|---|---|---|---|---|---|---|---|
| | | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) | Frequency (F) | Percentage (%) |
| Pretest | Light | 8 | 30.8 | 4 | 15.4 | 12 | 23.1 |
| | Moderate | 6 | 23.1 | 10 | 38.5 | 16 | 30.8 |
| | Heavy | 8 | 30.8 | 8 | 30.8 | 16 | 30.8 |
| | Very Heavy | 4 | 15.4 | 4 | 15.4 | 8 | 15.3 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |
| Posttest | Light | 12 | 46.2 | 4 | 15.4 | 16 | 30.8 |
| | Moderate | 10 | 38.5 | 11 | 42.3 | 21 | 40.4 |
| | Heavy | 3 | 11.5 | 7 | 26.9 | 10 | 19.2 |
| | Very Heavy | 1 | 3.8 | 4 | 15.4 | 3 | 9.6 |
| | **Total** | **26** | **100.0** | **26** | **100.0** | **52** | **100** |

Source: Primary Data, 2023

Based on Table 2. It can be seen that the distribution of respondents based on stress levels is known that in the pretest group, the majority are in moderate and severe stress levels, namely 16 people (30.8%), then in the post-test group, the majority are at moderate levels as many as 21 people (40.4%).

### 3.1.1. Data Analysis Test

#### 3.1.1.1. Paired Sample T-test

Data analysis in this study uses a paired sample t-test. The results of the data analysis can be seen in Table 3.

**Table 3.** Paired Sample t-test results

| Group | Df | $T_{table}$ | $t_{count}$ | *P* |
|---|---|---|---|---|
| Control Group | 25 | 2,059 | 1,581 | 0,127 |
| Experimental Group | 25 | 2,059 | 3,586 | 0,001 |

Source: Primary Data, 2023

Based on the results of the analysis of the t-test on stress levels in the control group narcotics inmates, the $_{t\text{-count}}$ value (1.581) < $_{t\text{-table}}$ (2.059), and the p-value (0.127) > 0.05, thus it means that before and after brain gym in the control group there was no difference in the level of stress in the inmates. While the results in the experimental group were obtained with a calculated t-value (3.586) > $_{t\text{-table}}$ (2.059), and a p-value (0.001) < 0.05, the results of the study were interpreted as after brain gym in the experimental group

there was a significant difference in the level of stress in narcotics inmates. Thus, it can be interpreted that there is an effect of brain gym on stress levels in narcotics inmates.

#### 3.1.1.2. Test Unpaired sample t-test

The results of the Unpaired sample t-test can be seen in Table 4:

**Table 4.** Unpaired Sample T-test results

| Group | N | Independent Samples Test | |
|---|---|---|---|
| | | Mean ± SD | P - Value |
| Post Control Group | 26 | 22.884 ± 6.358 | 0.000 |
| Post Experimental Group | 26 | 20.230 ± 5.405 | |

*Source: Primary Data, 2023*

Based on the results of the analysis of the unpaired sample t-test, a value of p = 0.000 (p<0.05) was obtained, which means that there was a difference after brain exercise on the stress level of narcotics inmates in the control and experimental groups.

## 3.2. Discussion

### 3.2.1. Stress Levels Before Brain Gym

The stress level before brain gym is carried out by the majority of people has a severe and moderate stress level of 30.8%. These results are in line with the research Dikir et al. (2016) The level of stress of children was in the moderate category as many as 16 children (50.0%) before Brain Gym (Brain Gym). This research is also by the research that has been carried out by Purwanti et al., (2019) It was found that most of the students experienced stress in the moderate category before being given treatment as many as 43 people (65.2%).

The results of this study are also strengthened by Furqoni and Yuliani (2021) that elementary school students experienced high stress on average before being given brain gym as many as 10 respondents (55.6%). The same thing was also expressed by Soleman et al. (2022) which stated that before being given brain gym, none of the respondents experienced mild stress, while the moderate stress category had 11 respondents (73.3%), and for the severe stress/panic category there were 4 respondents with (26.7%). Based on the results of the study Rahayu (2017) It was found that before brain gym, all students experienced stress and the most experienced by students was moderate stress (50%).

Results Purwanti et al. (2022) stated that before being given gymnastics, most of the respondents experienced stress in the moderate category as many as 57 respondents. Based on research Widhiyanto and Hartono (2023) The results were obtained that most of the respondents experienced moderate stress as many as 21 respondents (60%) before brain gym and music therapy.

Prisoners who experience moderate stress tend to have less than optimal quality of self-esteem (Juniartha, 2015). Furthermore, respondents who experienced stress were experiencing complaints such as negative feelings, decreased concentration, and unclear fear. Asnita et al. (2015) found that 6.50% of inmates who had low self-esteem had high stress. Palifiana and Kumorojati (2018) It found that individuals who had very high stress would have poor sleep quality with a percentage of 42.10%.

### 3.2.2. Stress Levels After Brain Gym

The stress level after doing brain gym is mostly moderate, which is 40.4%, This brain gym makes stress decrease, the mind becomes clear, and reminds a person's memory (Dikir et al., 2016). In the research Maramis & Emor (2022) The function of the right and left brain will increase after being given brain gym. This is following research conducted by Rahayu (2017) A total of 20 respondents experienced a decrease in stress through Brain Gym.

The results of the study are supported by the research conducted Dikir et al. (2016) Stress in children decreased after administration of Brain Gym. The results of the study showed that brain gym was effective in reducing stress in children through brain gym movements (Brain Gym). These results are reinforced by research Cahyadi et al. (2022) which states that brain gym can reduce the stress of five students from high stress to moderate stress, brain gym also reduces five students not to move to medium stress. Based on research Purwanti et al. (2022) The stress level of respondents after doing gymnastics showed that most of the respondents experienced mild stress as many as 60 respondents (87%).

Cahyadi et al. (2022) states when individuals do Brain Gym appropriately and orderly frequency of conducting Brain Gym The brain parts will work together and make the body more relaxed. Blood flow and oxygen will flow smoothly to the brain due to Brain Gym can open up the closed part of the brain to be exposed. In addition, brain gym can stimulate both sides of the brain at the same time. Prasetyo and Saputra (2017) mentioned that the importance of brain gym to stress levels in school-age children. Brain gym carried out for one week has a significant impact on reducing stress in school children, namely a p-value = 0.000.

Sutriani and Masnina (2019) states that individuals who are in prison will experience inner conflict within themselves. The inner conflict experienced by inmates is the feeling that an inmate will have an inner conflict in him because there is a sense of exclusion by other inmates in the prison. Stress will also get worse the longer you stay in prison. Anger, resentment, and suspicion are also signs of inner conflict while in prison. The presence of various movements in the hands and feet during brain gym will increase stimulation to the brain and this can help improve a person's cognition. Adrenaline hormones will decrease and endorphins will increase when brain gym are performed. This condition will provide a sense of pleasure, comfort, security, prosperity and make the body relax. This exercise should be done regularly 2 times a day and done for 15 minutes.

### 3.2.3. The Effect of Brain Exercise on Stress Levels in Narcotics Inmates in Class II A Narcotics Prison Yogyakarta

Based on the results of the analysis, it was found that there was an effect of brain gym on stress levels in narcotics inmates. The results mean that there is a decrease in the average level of stress in inmates who are treated with brain gym compared to inmates who do not. These significant results show that brain gym can provide good benefits in reducing stress on the brain.

According to the results of the study Wang (2018) in a journal titled The Effects of Brain Gym on Stress Reduction in Young Adults: A Randomized Controlled Trial, brain gym has been shown to have a positive effect in lowering stress levels. This is due to the following factors: first, brain gym is able to increase concentration and focus levels. By focusing on something intensely, a person is less likely to be affected by intrusive stressful thoughts. The results of this study are also following the research by Marmi (2018) which states that all students who are given brain gym exercises will decrease the stress experienced. Results Pratiwi and Widarti (2023) found that giving Brain Gym can reduce stress in students.

Research Tyas (2021) gives the idea that students who are stressed in completing the final project can drop after being given a brain gym. The result is that there is an influence of Brain Gym on the level of student stress in completing the final project in the pandemic with a value of P value 0.000. Students who experience anxiety while completing their thesis during the pandemic can reduce their anxiety after being given Brain Gym. The results of this study are in line with Mustain et al. (2018) which describes the effect of Brain Gym on stress before and after administration Brain Gym. Results Purwanti et al. (2022) stated that most of the respondents experienced mild stress as many as 60 respondents (87%) after doing brain gym.

This is in accordance with research conducted by Rahayu (2017) Obtained a score P value 0.032 <0.05, meaning that there was a difference in stress levels between the intervention group and the control group. This also means that there is an effect of brain gym on reducing stress levels in inmates in the Samarinda class III narcotics prison. Sutriani & Masnina (2019) stated that in gymnastics the brain can activate the nerve connections between the body and the brain to facilitate the flow of electromagnetic energy throughout the body. This flow of energy will guide vision, hearing, and the muscles to respond. Adrenaline hormones will increase when stress and movement increase energy and a positive attitude can help activate the neocortex so that it can think reasonably.

Similar research was also conducted by Rahayu (2017) which states that Brain Gym If done regularly, it will facilitate the flow of blood and oxygen to the brain, as well as movements that can stimulate the work and function of the brain optimally. After being given treatment, most of the respondents experienced a decrease in stress levels.

## 4. Conclusion

Based on the results of the study, it can be concluded that before doing brain gym, the level of stress of inmates is at a moderate and severe level, while after doing brain gym, the level of stress of inmates is at a moderate level. There is an effect of brain gym on stress levels before brain gym are carried out on narcotics inmates and after brain gym is carried out on narcotics prisoners. The results of this study also show that there are differences in stress levels before and after brain gym in narcotics inmates. There was a difference in the level of stress in narcotics inmates in the experimental group and the control group.

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